StratIT – A Framework Describing the Contents of IT Strategies. Background and Approach

Full Paper

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Abstract

Until today no consensus has been found regarding the contents of IT strategies. This results in uncertainty when formulating the topical areas of IT strategy documents. The Special Interest Group (SIG) "Strategisches Informationsmanagement (SIM)" (Strategic Information Management) of the "Gesellschaft für Informatik" (German Informatics Society)" addresses this gap by developing a framework that defines generic perspectives, domains, and elements of an IT strategy. Within the group, researchers and practitioners bundle their insights and experiences in the development of the framework named "StratIT". We report on the current status of work and develop a structured basis for discussion. In addition, we describe the methodical and scientific foundations and the "modus operandi" of the SIG. Our intent is to communicate the perceived problem, our approach, and the developed artifact to an international audience, to get feedback and also to exchange ideas.

Keywords

IT strategy, design science research, contents of IT strategies, framework.

Preliminary Remarks

The Special Interest Group (SIG) Strategic Information Management (SIM) is an expert body assembled from researchers, practitioners and consultants with many years of experience in the area of research. The SIG members all have hands-on experience in IT strategy development. Their different roles and backgrounds allow approaching the topic from a variety of perspectives. The group aims at establishing StratIT as a reference model for IT strategy artifacts. Our goal is to provide a guideline that aids other practitioners responsible for and tasked with IT strategy formulation.

Introduction

Background and Problem Identification

In the day-to-day work of CIOs and IT leaders, complexity has risen in the recent past (Weiss et al. 2003; Ghawe and Brohman 2016). IT is increasingly a critical enabler, it influences internationalization capabilities, is a source of competitive advantage and influences efficiency. Globalization and dynamic business requirements and, in addition, new technologies, standards and frameworks further increase complexity (Borghoff 2011). Additionally, complexity is rising due to various models applied currently for sourcing in IT which has to been managed from a strategic point of view (Gallivan and 0h 1999).

Against this backdrop, CIOs have to deal with the challenges of harmonizing business and IT (Business/IT alignment), contributing to firm performance (IT business value, Tallon 2007), adhering to external laws, regulations and corporate policies (Compliance) while managing IT risks and security. One core element to cope with this variety of challenges is, besides IT governance and enterprise architecture, the development and implementation of IT strategies that take a long-term view and, hence, guide actions by long-term goals (Ghawe and Brohman 2016).

Interestingly however, in the different fields of IT strategy the research intensity differs a lot. While in academics, *strategic planning of IT* and *development of IT strategies* has been researched to some extent (Merali et al. 2012), less attention has been paid to the *implementation* of IT strategies (Bartenschlager et al. 2010, Bartenschlager 2011) and to the *contents of IT strategies* (Teubner et al. 2012). Only few papers discuss and study "what its contents are supposed to be" (Teubner 2013). Similarly, professional IT journals/web portals attach great importance to the IT strategy (Luftman et al. 2011), but do not provide support in case a CIO has to decide which contents should be considered and are of importance. Therefore, we perceived a need for guidance with respect to this aspect of IT strategies.

In related fields, frameworks have been developed to guide managers in implementing IT governance (e. g. COBIT), IT service management (e. g. ITIL), and project management best practices (e. g. PMBOK). However, to date, there are only a limited number of studies investigating the impact of the application of those frameworks in organizations (e.g. (Marrone et al. 2011)). Their results provide evidence that guidance by frameworks positively affects e. g. the strategic positioning of the IT and the alignment of business and IT. But, to the best of our knowledge, no framework in terms of a reference model exists describing the topical areas and contents of an IT strategy.

The Special Interest Group "Strategisches Informationsmanagement (SIM)" (Strategic Information Management) of the German "Gesellschaft für Informatik" (German Informatics Society)" has set itself the goal to fill this gap. To do so, we intend to define topical areas and content elements of an IT strategy in a methodical manner and to support the tailoring of the scope of the resulting framework from different viewpoints and depending on external factors. Along this line, the framework (StratIT) should be adaptable according to the specific needs of an organization and the industry in which it operates.

Goals and Objectives of the Solution

The members of the SIG decided to infer – based on the problem identification above – goals and objectives in order to envision the desired results as a longer term / qualitatively defined picture of and as steps along the way towards the desired result. They ought to reveal, what a better artifact would accomplish (Peffers et al. 2007). We derived goals and objectives of StratIT by trying to answer the following question: *How have IT and business IT alignment been improved by StratIT if it had been implemented by 2025?* Based on this, the following goals and objectives emerged:

- StratIT is accepted in both, science and practice (business), as a tool and methodological support for developing IT strategies.
- The IT in organizations has matured (due to the use of StratIT) and is recognized and perceived as a reliable partner.
- Due to a good IT strategy, the IT function in companies is managed and perceived more sustainably, more modernly and professionally.
- There is a recognizable control and increase of the company performance because of the IT and the IT

strategy. IT strategies are documents that initiate, guide and ensure the transformation of IT and business.

The aforementioned goals and objectives of StratIT result in the following objectives of the SIG:

- Definition of an appropriate framework supporting IT strategy formulation
- Definition of generic topical areas and a coherent structure
- Methodological foundation of the design process to gain acceptance and reach justification

Even if the *scope* of IS/IT strategies seems to be widening, the main focus of StratIT is the organizational level of the IT function. Especially in times of digital transformation is argued that a broader strategic view on IT is needed (including products, clients, competitors and suppliers) and that a digital transformation strategy might impact a company more comprehensively than an IS/IT strategy does (Hess et al. 2016). Similarily, Drnevich and Croson (2013) argue that too often in literature, IT is framed as a functional-level strategy and, instead, should be seen as integral to a firm's business-level strategy. Nevertheless, our view of IT/IS strategy is based on one conception presented in Teubner (2013), that considers "IS strategy as departmental plan" answering questions like to following ones: Which tasks are to be carried out by the IT function? What is the role of IT for business and within the enterprise? What is the disposition towards IT investments, IT use, and IT management? Since all these questions will not be less important even in the age of digital transformation, we adopt an organization-centric and department-centric stance for StratIT.

In what follows, we will present the current state of work. The next section presents the methodological foundation for the development of the framework. Section three on the one hand describes the process of design and development, i.e. the findings from the literature, and, on the other hand, it presents the completed work, i.e. the structure of the framework and – from a high-level view – its contents and topical areas. After that, we discuss the roadmap for future work, because StratIT is "ongoing research" and this paper the first demonstration of StratIT to an international audience.

Methodological Foundation of the StratIT Development

This section outlines the methodological foundation for the development of StratIT. We describe our *way of working* based on the design science research methodology DSRM (Peffers et al. 2007) and, in addition, we discuss concepts of truth (sometimes also referred to as theories of truth) which are important justification criterion for our endeavor. The latter describes *ways of justifying* artifacts, which is of primary importance for design-oriented research. Regrettably, we cannot cover other important approaches we base our work on – like method engineering and meta modelling (Goeken, Alter 2009) – due to page restrictions.

Way of Working

With the aim to link the development of StratIT to the design-science paradigm of IS research, we base our research and development process on the DSRM, a methodology to guide the development of artifacts, e. g. frameworks, models and instantiations. The DSRM is "a methodology for conducting design science research in information systems" and should help researchers to produce results that are valuable and rigorous (Peffers et al. 2007). The resulting methodology (see table 1) contains of six steps and iterations back from evaluation and communication to the second and the third activity.

1. Problem Identification and Motivation (define problem & show importance)
2. Objectives of a solution (what would a better artifact accomplish?)
3. Design and develop artifact
4. Demonstration (find suitable context & use artifact to solve problem)
5. Evaluation (observe how efficient, effective the design is & iterate back)
6. Communication (scholarly publications & professional publications)

Fig 1. Way of Working based on the DSRM of Peffers et al. (2007)

The first two steps have already been accomplished and have been described above. Step 3 is partially documented in this paper – from a high-level view. Steps 4 to 6 are subject to future research in the SIG. The table also outlines relevant aspects regarding the steps three to six.

Ways of Justifying

Within design-oriented research, the justification of design decisions is of primary importance in order to establish research rigor. Guideline 5 of Hevner et al. (2004) in this respect calls for the "application of rigorous methods in both the construction and evaluation". In the present project, a justification by a formal proof or by an empirically confirmed theory does not appear as an option. Thus, transparency is a way out: Frank (2006) discusses implications of the transparency postulate stating that it "recommends making all non-evident suppositions that are needed to justify a construction explicit". Suppositions in design research can relate to goals/objectives, requirements, choice of evaluation methods and any design decision in the process of creating the actual artifact. Justification for these can be gained by one of the following approaches (see also Frank (2006)):

According to *correspondence theory*, truth is determined by the relationship of a statement to the part of the world described by the statement i.e. if it fits the relevant part of reality. Hence, truth consists in a relation to reality. A justification can therefore be gained when there is a correspondence with experience, empirical confirmation, proof of a successful implementation, or a meaningful demonstration e. g. by means of case studies. In this sense, in StratIT a foundation can – in a first step – be achieved by the fact that the SIG consists of persons with a practical background (IT strategy research, training, consulting or implementation). Their experiences are part of the development of StratIT and are brought together in the course of the artifact development. An intended empirical confirmation results from the forthcoming evaluation of the framework in CIO interviews, expert interviews, student studies, etc.

The *coherence theory* states "that the truth of any (true) proposition consists in its coherence with some specified set of propositions" (Stanford Encyclopedia of Philosophy). This might mean that potential new knowledge is tested against accepted knowledge (Frank 2006). For design science, this claim can be interpreted as doing both, developing an artifact in consistence with accepted artifacts and evaluating potential new artifacts against accepted ones. Along these lines, we refer to related subject areas (e. g. general strategy research) and draw on relevant knowledge and adopt models that are relevant and applicable (e. g. the Business Motivation Model (BMM)). Methodically, consistent embedding is ensured through meta modeling and method engineering. In addition, accepted models can – in a further step – be used for evaluation, e. g. with respect to the completeness of the contents.

A third approach is the *consensus theory* that emphasizes discursive human judgment as an option for justification. In this approach, the justification of a statement (or an artifact) is a matter of social agreement, including the agreements gained by a scientific community. In the present case, this is the SIG itself and the IS community. The various versions of the StratIT framework were refined in discussions, expert focus group meetings, as well as in a Delphi process. By means of consensus in SIG and beyond, we try to ensure practicality. This is considered as an extended consensus and validation by practitioners of IT strategy management.

StratIT domains and development of the grid elements

Literature Review; State-of-the-Art

Strategic planning for information systems became a topic of research within the 1980's (Earl 1989, Galliers 1991, Henderson et al. 1993, Ward et al. 2011, Merali et al. 2012). This research focused primarily on the development of IS strategies, on methodologies for strategic information systems planning (SISP) and on business-IT alignment or strategic alignment (Henderson et al. 1993, Avison et al. 2004, Bartenschlager et al. 2009, Albayrak 2008)). Teubner et al. (2012) summarize: "Academic research so far has focused on the process of strategy formation rather than on the outcome, the resulting IT strategy, and its contents [...] only 26% of articles are concerned with the content while 84% address the process of formation". Not surprisingly, Teubner (2013) comes to the conclusion that only 13% of publications focus on the definition of an IS strategy and its contents. Gottschalk (1999) and a recent publication of Merali et al. (2012) confirm that previous research is concentrated on the planning process and neglects the actual result, the IS strategy itself.

Earl (1996, 489) is an early and prominent example of an approach to structure the *contents of an IS/IT strategy*. In his "Organizational Fit Framework" he mentions four domains (Organizational Strategy, IS

strategy, IT strategy and IM strategy) that are to be addressed by a complete strategy. In addition, he underlines the importance of relating the domains to each other: "The notion of 'fit' proposes a consistent set of relationships, which are continually changing and this should be mutually adapting" (pg. 489). Table 1 outlines the three information related domains and displays relevant questions, subjects, and its focus. For our work, we have used these domains as an orientation, which provides a background for our artifact. From our point of view, an update seems to be important because of the process and service orientation of the IT today and the IT goals stated in the introduction (alignment, business value of IT, compliance, risk, and security).

Information System Strategy	Which business tasks should be supported by IT?	What?	Subjects are the application portfolio and the planned IS projects	Focus on business goals and demand (Alignment, Opportunity, SBU, Group)
Information Technology Strategy	How is IT to be used to support these tasks?	How?	Subjects are the necessary technologies and the technological opportunities	Focus is on technology and implementation (Scope, Architecture, Capability, Powers)
Information Management Strategy	Whose responsibility is it to provide IT-based solutions and services to the business?	Who?	Subjects are the role of IT in the enterprise and the necessary human resources	Focus on IT and its responsibilities (Roles, Relationships, Formal, Informal)

Table 1: Information Related Domains according to Earl (1996); see also Earl 1989 and Teubner 2013

Teubner (2013) also refers to the contents of IT strategies and distinguishes two fundamental approaches for investigating them: checklists (a list of topics and key questions) and conceptual models. In his article, he juxtaposes three checklists for IS strategy contents identified in the literature. These are derived through literature analysis (Das et al. 1991), case-study analysis (Conrath et al. 1992) and method analysis (Lederer et al. 1996), respectively. For our work, we abstracted and compiled the contents and arranged them under four topics (see table 2). This abstraction level seems more adequate for our stated purpose (Teubner 2013). In addition, Teubner (2013) identifies the contents, which are particularly emphasized in the academic discussion. These include: IT & competitive advantage; information as resource; application systems; IT infrastructure; IT architecture, IT security; IT human resource; IT organization and IT outsourcing. He notes that the academic and practical views are clearly different and criticizes that practitioners and researchers value the relevance of those aspects differently and, furthermore, that research findings have little practical impact.

Topic	**IS Strategy Focus**	**Ressources and Tools**	**Technology**	**Value Creation**
Elements	Goals and Objectives Industry- and Vertical development Strategy definition and evaluation cycle Organizational change Execution focus Enterprise architecture management	Ressources Development process Staff capacity/capability (planning) Resource plan Finance plan Skill/training plan Strenghts and weaknesses of resources	Technology-Architecture Hard- and Software (-planning) Application Architecture	Organization (-planning) Sourcing Systems development (-planning) Implementation (-planning) Management of cost, benefits, risks, IT performance management) Enterprise Architecture

Table 2: IS strategy topic list compiled from Das et al. 1991, Conrath et al. 1992, Lederer et al. 1996, see also Teubner (2013)

Design and Specification of the StratIT Framework

The strategic topics mentioned above form a list of potential issues to be addressed in an IT strategy. Our working group decided to structure these issues into domains and further into elements. At the macro level, the domains constitute a framework of topics. They are split up into elements, for a more detailed

consideration at a micro level. To further improve clarity and refine their context, the domains are grouped into "perspectives".

The *perspectives* are not mutually exclusive. That way, they allow choosing the most suitable conceptual context for analyzing and solving the particular strategic challenges at hand. The *elements* then specify topics and challenges in need for IT-strategic positioning, guidance or decisions. They can be specified and communicated in the context of their perspective. At that point, the *domains* could become structural elements (chapters) in a strategy document.

The current version of the framework is shown in Figure 2. We will now describe the perspectives with their domains and elements.

- *Overall Direction Perspective*: The overarching domain of "Strategic Principles and Guidelines" defines the basic strategic direction to be implemented through the IT strategy, tailored to the company in question and their IT management paradigms. They are incorporated in detailed strategic initiatives and projects. This domain is – on a lower level – structured in accordance with the BMM (Business Motivation Model) of the OMG. Hence it describes means and ends in terms of mission, directives and desired results of IT (and their interdependencies) within an enterprise. Following are sample strategic topics of principles and guidelines which the SIG found in actual IT strategies: how does the IT strategy relate to the business strategy; how do the operating models of IT and business relate to each other; innovation; strategic IT-goals; IT vision and mission; culture; business/IT-alignment; governance, risk, compliance; IT-security; planning; controlling; continuous IT strategy management.
- *Value creation from IT:* here StratIT incorporates a perspective on IT from a source-make-deliver perspective which has been adapted from the SCOR model of enterprises. We define domains on sourcing (suppliers), IT organization and service management (internal as well as external). Recent examples for relevant elements are: IT-vendor-management (Sourcing strategy, number and type of vendors, in- versus outsourcing, degree of outsourcing in IT), IT organization (structure versus process), and customers of IT (internal versus external).

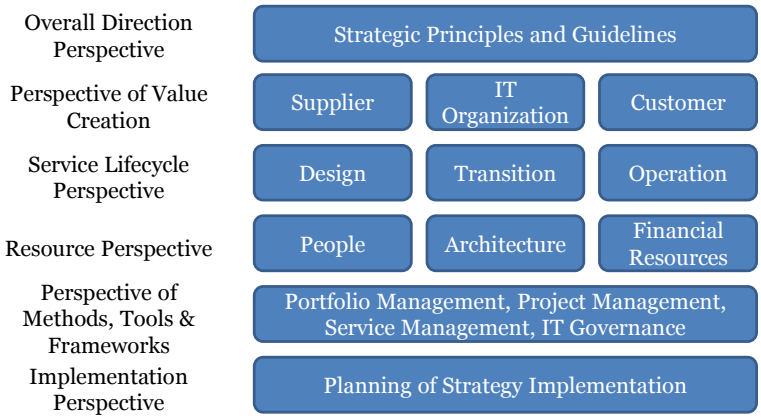


Figure 2: Perspectives and Domains of the StratIT Framework

- *Service-Lifecycle-Perspective:* Based on the classical plan-build-run, and on the Information Technology Infrastructure Library (ITIL), the elements are Service Design, Transition, and Operation. Here, the IT strategy can spell out relevant IT service management processes to be implemented, improved or validated.
- *Resources Perspective:* this perspective includes people, systems plus data, and budgets (financial resources). People include technical and managerial knowledge, capabilities, and competencies. Systems and data can be described as architectures, at different levels, such as business object, applications, information, integration, and infrastructure.

- *Methodologies, Tools, Structural frameworks:* especially in IT strategies of smaller companies or divisions, the work group found details on how to approach planning and budgeting of strategic programs and projects. Recent elements were: portfolios of projects, services or resources; architecture principles, decision guidelines and target architectures.

To guarantee a coherent structure of the description, the SIG developed a template. It ensures that for all domains, a set of characteristics are described (see fig. 3 for an example of a part of the template).

…

3. Regarding the domain << title domain >>, content is considered (statements are made) regarding << short textual description / a few sentences in terms of a definition (more concrete contents are provided below) >>

4. It is regarded as a possible relevant part of an IT strategy, because << outlining of the reasons, why this domain is, from our point of view, a content-relevant domain; to justify this, we refer to references (models and frameworks, lists of strategy contents from the literature, IT strategies analyzed by us ...) or other evidence >>

…

Figure 3: Part of the Template to describe the Domains of StratIT

Our SIG developed and validated the elements and their grouping into domains and perspectives through a Delphi study. This is done in several iterations of changing or expanding the model of domains and their elements. Between each iteration the participants were informed of the changes suggested by the other participants, and asked to suggest further changes based on the additional information, if needed. The iterations ended when there were no more significant changes or addition, i. e. when a considerable level of consensus had been reached. Nevertheless, in general and when applied, the list of perspectives, domains and elements should not be regarded as exhaustive and complete. It can (and should) be expanded, or tailored into a strategy document that reflects a particular set of challenges, threats and opportunities at a given company in a given situation.

Description of Elements in StratIT

In order to describe the strategy elements in a consistent and comparable manner, the SIG defined a model of 7 constructs that is utilized for every element description (see Figure 4).

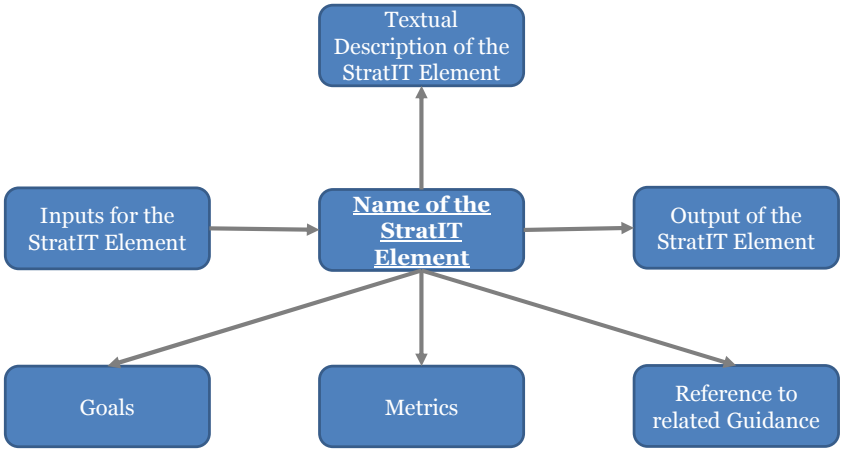


Figure 4: Structure of description of elements in the StratIT-Meta model.

Similar to the COBIT framework (IT Governance Institute 2006, 2009), the elements are described using the following constructs (StratIT meta model on micro level): name of element, textual description of element, goal and metric per element, inputs in the sense of preconditions (standards, presets), outputs in the sense of post-conditions (deliverables), and links to relevant and related references. The work group is currently completing the actual description of the elements of StratIT, using this meta model.

Demonstration of the usefulness of the approach and evaluation

Subsequent steps after development are still in progress. Usability and utility of the model will be assessed in relation to our goals. This will take the applicability of the framework and its template documents into consideration. Applicability of StratIT is much improved by the possibility of tailoring according to specific goals and context, under which the IS strategy is developed. Moreover – considering the consensus theory of truth (see above "way of justification") – we consider repeated applications of the Delphi method to improve the reliability of the artifact in an iterative fashion. In addition, we plan a conceptual evaluation, in which we compare and contrast our results with the IS strategy contents as identified in the literature review (see above) or with existing IT strategies. Furthermore, case studies and student papers should be based on StratIT to evaluate and assess its applicability and usability and to gain further confidence.

Summary and Outlook

The present article is a report on ongoing research and a first contribution to concretize the StratIT framework. It gives an account of the development of a framework including thematic domains and granular elements for IT strategies. This project of the German SIG-SIM is provided with a methodological and scientific-theoretical principle based on the design-science and the method-engineering approach as well as theories for justifying the research endeavor (theories of truth). Based on this, a first version of the framework is presented consisting of perspectives which motivate domains. In these, so called IT strategy elements are integrated. In addition, following the DSRM of Peffers et al. (2007), the research project is motivated and a problem description is carried out as well as a description of the initial situation.

In this paper, we present the status of our work and intend to expose some foundations and methodological aspects with the goal to improve transparency and to justify our endeavor. There are well accepted and sound frameworks like COBIT, ITIL or PMBOK. But, from an academic point of view, we argue that their ontological and epistemological foundation is weak. Hence, in our work we want to be more precise and transparent in this respect.

In terms of an outlook, further research work is required to the following topics: evaluate the application of the StratIT framework for professional practice, case studies to learn about applicability and feasibility, validation by empirical research both qualitatively and quantitatively, (e.g. grouping the elements into the framework (Delphi study), as well as the method development for a (situative) tailoring of StratIT. To realize the last-mentioned issue, the context factors have to be analyzed and related to the domains and elements. Hence, the following steps are planned and in progress: evaluation and validation of the framework by existing IT strategies of the professional practice, validation and extension of the StratIT framework by further research work, revision and if necessary, extension of the existing domain and element grid based on further comparisons of the theoretical and practical results from the point of view of the StratIT framework.

Hevner et al. (2004) guidelines are often used as evaluation criteria. When applied for this purpose, they are beneficial for our work to rate the quality and the soundness of the whole research endeavor and development of the artifact. In addition, feedback on the overall approach and the methodological stance – in terms of an evaluation of our approach and endeavor – should be gained through communicating our results to an (international) audience of scholars and experts.

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